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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/734,029
Filing Date: December 11, 2003
Appellant(s): UHM ET AL.

Aasheesh Shravah
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/14/2007 appealing from the Office action mailed 1/8/2007

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

.(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is deficient. 37 CFR 41.37(c)(1)(v) requires the summary of claimed subject matter to include: (1) a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number, and to the drawing, if any, by reference characters and (2) for each independent claim involved in the appeal and for each dependent claim argued separately, every means plus function and step plus function as permitted by 35 U.S.C. 112, sixth paragraph, must be identified and the structure, material, or acts described in the specification as corresponding to each claimed function must be set forth with reference to the specification by page and line number, and to the drawing, if any, by reference characters. The brief is deficient because the referenced portions of the Specification in

paragraph 11 on p 8 do not recite a glass fiber web. An additional reference, page 3, lines 1-4, which recites a glass fiber web, should be included.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct. It is noted that Claim 7 is missing. However, claim 7 is cancelled and is therefore not appealed.

(8) Evidence Relied Upon

4957559	Tiesler et al	9-1990
5106903	Vanderhoff et al	4-1992
5518586	Mirous	5-1996
6228281	Sage	5-2001
6432482	Jaffee et al	8-2002

Hydroformer™. Datasheet [online]. Voith Paper, [retrieved on 2007-01-03]. Retrieved from the Internet: <URL:http://www.hydroformer.com/>.

Deltaformer™. Datasheet [online]. Glens Falls Interweb, Inc., 2002 [retrieved on 2007-01-03]. Retrieved from the Internet: <URL:http://web.archive.org/web/20020609105744/http://gfinterweb.com/deltaformer.html>.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-6 and 8-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mirous (5518586) in view of Sage (6228281) and further in view of Jaffee et al (6432482).

Mirous discloses a wet-laid process for forming a glass fiber mat (col 3, line 64 to col 4, line 24; col 5, lines 39-41) comprising

- adding glass fiber bundles to an aqueous dispersant medium and forming an aqueous "white water" slurry of fibers under agitation that can contain conventional additives, such as a lubricant and a dispersant (col 3, line 64 to col 4, line 14). The dispersant contains hydroxyethylcellulose, which is an emulsifier (if evidence is needed, see Vanderhoff et al, 5106903, col 5, lines 16-24).
- agitating the slurry to cause separation of the fibers in to a uniform disperaion of fibers (col 4, lines 8-11),
- removing the fibers from the water by collecting them on a screen to form a mat (col 4, lines 15-21),
- drying by means of vacuum (col 4, lines 18-21),
- applying a binder composition to the dewatered mat (col 4, lines 22-24),
- curing the binder composition at a temperature of at least 200 °C (col 5, lines 39-41).

Mirous teaches that the most widely used binder is urea-formaldehyde resin (col 2, lines 3-5). Example 1 discloses a urea-formaldehyde binder (col 5, line 58 to col 6,

line 4). Mirous also teaches that surfactants are typically added to the white water to aid in dispersion of the glass fibers. Since emulsifiers are surfactants (see Tiesler et al, 4957559, col 1, lines 54-56), the surfactant of Mirous can serve the purpose of an emulsifier in aiding dispersion of the glass fibers. The surfactant or the dispersant (hydroxyethylcellulose) disclosed by Mirous, when added to the slurry and the slurry agitated, will function as an emulsifier and cause the entrainment of air, or at least it would have been obvious to one of ordinary skill in the art to obtain the claimed entrainment of air, because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.

Mirous does not disclose that the individual fibers are collected and dried on an endless moving conveyor or that the binder application step occurs on an adjacent endless moving conveyer. Mirous further does not disclose the composition or properties of the lubricant. Mirous also does not disclose that the sized fibers have a loss on ignition between about 0.01% and about 0.75%.

Sage discloses treating glass fibers with a sizing composition comprising a cationic lubricant that can be a partially amidated polyalkylene imine such as a reaction product of C_2 to C_{18} fatty acids with a polyethylene imine having a molecular weight from about 800 to about 50,000. The product has a residual amine value from about

200 to about 800 (abstract and col 4, lines 15-22). Sage also discloses that a suitable material is Emery 6760T, which is cited in the instant disclosure as having the required properties (col 4, lines 28-33). Sage further discloses that the amount of cationic lubricant is present in an amount from about 0.01% to about 0.1% by weight of the composition (col 4, lines 39-43). Sage teaches that the sizing composition helps prevent breakage of fibers during handling and reduces the fuzz on the surface of the fibers (col 1, lines 58-64; col 2, lines 10-13). Sage also teaches that emulsifiers are typically added to sizing compositions (col 2, lines 44-55), thus emulsifiers can also be present in the white water from the sizing composition.

Sage does not disclose that the individual fibers are collected and dried on an endless moving conveyor or that the binder application step occurs on an adjacent endless moving conveyer.

Jaffee et al discloses a conventional process for continuously forming multiple layer nonwoven glass fiber mats (col 3, lines 49) comprising

(a) forming and drying a mat on a permeable moving belt (inherently endless) (col 4, lines 5-19),

(b) transferring the dried mat to a second moving screen or belt (inherently endless) where a binding resin is applied (col 4, lines 20-24).

Jaffee depicts the process in Figure 1, where the drying portion of the apparatus is clearly located adjacent to the binding portion of the apparatus.

Jaffee does not explicitly state that the wet web is dewatered on the moving screen. However, Jaffee et al discloses that preferred processes for the production of

the mats are those known processes using mat forming machines like the Hydroformer™ or Deltaformer™ (col 4, lines 5-16). Dewatering of the wet web on the moving screen of the machine is inherent from the descriptions and diagrams of the mat formers, or at least would have been obvious to one of ordinary skill in the art.

The art of Mirous, Sage, Jaffee et al and the instant invention is analogous as pertaining to making nonwoven glass fiber mats. It would have been obvious to one of ordinary skill in the art at the time of the invention to use adjacent endless belts to form, dry and apply binder to the glass fiber mats of Mirous et al in view of Sage and further in view of Jaffee et al as a conventional process for making the mats. It would further have been obvious to one of ordinary skill in the art at the time of the invention to use the claimed sizing composition in the mat of Mirous et al in view of Sage to reduce the breakage of fibers and creation of fuzz on the fiber surface. The sized fibers disclosed by Sage have the claimed LOI, or at least it would have been obvious to one of ordinary skill in the art to obtain the claimed LOI, because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent.

(10) Response to Argument

Applicant reviews the outstanding rejections on pp 10-11. Regarding the loss on ignition (LOI) of the fibers, glass fibers sized with the composition of Sage have the

claimed LOI, or at the claimed LOI would have been obvious to one of ordinary skill in the art for reasons given in the rejection. The fibers produced by combining Mirous, Sage and Jaffee are fibers sized with the composition of Sage and will have the claimed LOI or, at least, the claimed LOI would have been obvious. In addition, no evidence has been presented demonstrating an unexpected LOI of the claimed fibers with respect to the fibers of the primary reference, Mirous.

Applicant argues on p 11, last two pars, that Sage does not teach a glass fiber mat but a sizing composition for glass fibers used for a variety of applications other than making glass fiber mats, thus it would not be obvious to combine Sage with Mirous, which is directed to a method of making a glass fiber mat.

Sage teaches that glass fibers as well as woven and nonwoven fabrics, meshes and scrims have been used for some of the recited purposes (col 1, lines 21-28). Sage also teaches that it has long been recognized that it is advantageous to apply a size coating onto glass fibers as soon as they are formed from the bushing. Sage further teaches that the size coating reduces fuzz and improves processing properties of the fibers, such as fiber bundle cohesion, spreadability, fiber smoothness and softness, abrasion resistance and ease in unwinding the fiber bundles. Additionally, the sizing protects the fibers from damage during handling (col 2, lines 10-32). One of ordinary skill in the art would have recognized the properties imparted by the sizing of Sage as desirable for fibers used in making a glass fiber mat, thus using the sizing composition of Sage in the process of Mirous would have been obvious.

Applicant argues on p 12 that the partially amidated polyalkylene imine cationic lubricant is shown in the instant Specification to provide strength to the fibers so that individual glass fibers are not lost between the drying and binding steps. Examples used to demonstrate the advantage include fibers sized with compositions comprising amounts of a partially amidated polyalkylene amine or a partially amidated polyalkylene imide cationic lubricant from 0.05 to 0.15 wt%. For comparison, a sizing composition using a typical cationic lubricant from prior art was used in concentrations similar to the concentration of examples of the present invention.

The typical cationic lubricant from prior art is not specified and it cannot be determined if the lubricant corresponds to any of the cited prior art. The examples of the present invention include a range of concentrations, thus the specific concentration used for the comparative example is unknown. Further, the amount of the sizing ingredients retained on the fibers is unknown.

Regarding the examples of the inventive lubricant, the Specification recites (p 8, lines 3-4) that the sizing composition for Example 1 comprised partially amidated polyalkylene amine. The Table on p 10 recites that the sizing compositions comprise partially amidated polyalkylene imide. The claims recite a sizing composition that includes a tially amidated polyalkylene imine. An amine, an imide and an imine represent three different chemical species. The examples do not appear to provide any support for the claimed lubricant.

Finally, the range of compositions used in the examples is not commensurate with and cannot provide adequate support for the broader claimed ranges.

Sage teaches that it is well known to size glass fibers as soon as they are formed and discloses a sizing composition comprising the claimed lubricant for providing beneficial properties to the fibers. Although Sage does not teach the claimed strength property, "[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." Atlas Powder Co. v. Ireco Inc., 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999).

Applicant states on p 12, last par, that the glass fibers are separated by immersing them in an aqueous dispersant medium that includes an emulsifier, and the emulsifier generates entrained air when the slurry formed is agitated. Mirous discloses adding glass fiber bundles to an aqueous dispersant medium and forming an aqueous "white water" slurry of fibers (fibers are separated) that contains a dispersant, which contains hydroxyethylcellulose (an emulsifier). The slurry is agitated to form a uniform dispersion (col 3, line 64 to col 4, line 14). While not specifically disclosed in Mirous, the hydroxyethylcellulose will function as an emulsifier and cause the entrainment of air, or at least such entrainment of air would have been obvious to one of ordinary skill in the art because the claimed and prior art composition are substantially identical.

Applicant argues on p 13, first 2 pars, that Mirous discloses urea-formaldehyde resin with a water insoluble anionic phosphate ester as a binder and a white water system comprising hydroxyethyl cellulose, whereas the instant claims do not require the use of a water insoluble anionic binder in a white water system and do not utilize a hydroxyethyl cellulose dispersant.

The instant claims recite that the fibers are immersed in an aqueous dispersant medium that includes an emulsifier, whereby a slurry is formed. Mirous discloses slurrying the fibers in an aqueous medium containing hydroxyethyl cellulose, a known emulsifier, that aids in suspending the glass particles in the white water slurry (col 4, lines 1-3). The open language of the instant claims does not preclude additional ingredients, such as the disclosed anionic phosphate ester.

Applicant concludes on p 14 that the elements of independent claims 1 and 11 are not taught or suggested by the prior art.

As shown above and in the prior Final Rejection, all of the elements are taught in the cited prior art. Reasons for combining the prior art have been discussed. The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. See, e.g., In re Kahn, 441 F.3d 977, 987, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) (motivation question arises in the context of the general problem confronting the inventor rather than the specific problem solved by the invention); Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc., 424 F.3d 1293, 1323, 76 USPQ2d 1662, 1685 (Fed. Cir. 2005) ("One of ordinary skill in the art need not see the identical problem addressed in a prior art reference to be motivated to apply its teachings.") The proposed combination uses elements known in the prior art with no change in their respective functions to provide predictable results to one of ordinary skill in the art.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Dennis R. Cordray

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